DOCUMENT RESUME

ED 211 032 HE 014 749

AUTHOR Richardson, Richard C., Jr.; And Others
TITLE Functional Literacy in the College Setting. AAHE-ERIC/Higher Education Research Report No. 3, 1981.
INSTITUTION American Association for Higher Education, Washington, D.C.; ERIC Clearinghouse on Higher Education, Washington, D.C.
SPONS AGENCY National Inst. of Education (ED), Washington, D.C.
PUB DATE 81
CONTRACT 400-77-0073
NOTE 52p.
AVAILABLE FROM Publications Department, American Association for Higher Education, One Dupont Circle, Suite 600, Washington, DC 20036 ($4.00 members; $5.50 nonmembers).

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *College Students; Communication Skills; Cultural Context; Curriculum Evaluation; *Developmental Studies Programs; Educational Objectives; *Functional Literacy; Higher Education; *Language Processing; Language Research; *Language Skills; Mathematics; Program Evaluation; Reading Skills; *Remedial Programs; Teaching Methods; Writing Skills

ABSTRACT

The prevalence of underprepared students attending colleges, the need to define literacy requirements of courses, the implications of research on literacy in the design of remedial programs, and the need for systematic evaluation of such programs are considered. Literacy is broadly defined as a language competence that is used to achieve both individual and societal goals. Literacy has a functional dimension, involving the specific competencies required to perform in the occupational field for which an academic program prepared students, and a symbolic dimension, which is associated with having knowledge, cognitive competence, and values established in society. It is proposed that policies involving issues of literacy and its development are adequate only when all components of its definition are considered: (1) the nature of the language involved; (2) the way the language is processed; (3) the context in which the language is processed for use; and (4) the functions of this use in relation to specified goals. Despite the use of a variety of terms and the lack of clearly defined purposes, the emphasis of most efforts described in the literature seems to include preparing the students for regular college work. Some are comprehensive programs incorporating specific literacy skills like reading and writing and objectives like improved self-concept, while others focus on one specific skill such as the development of basic arithmetic skills. Attention is directed to teaching methods, institutions' support for organization of developmental programs, and common practices and problems in the evaluation of developmental programs. A bibliography is appended. (SW)

ED211032

Report 3 1981

Functional Literacy in the College Setting

Richard C. Richardson, Jr., Kathryn J. Martens, and Elizabeth C. Fisk

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AAHE-ERIC/Higher Education Research Report No. 3, 1981

Prepared by

ERIC®

Clearinghouse on Higher Education
The George Washington University

Published by

AAHE

American Association for Higher Education

Cite as:
Richardson, Richard C., Jr.; Martens, Kathryn J.; and Fisk, Elizabeth C. *Functional Literacy in the College Setting.* AAHE-ERIC/Higher Education Research No. 3, 1981. Washington, D.C.: American Association for Higher Education, 1981.

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This publication was prepared with funding from the National Institute of Education, U.S. Department of Education, under contract no. 400-77-0073. The opinions expressed in this report do not necessarily reflect the positions or policies of NIE or the Department.

Contents

1 **Overview**

3 **Literacy and the New Student**
3 Historical Perspective
5 Definitions
5 Diverse Students and Purposes

7 **Research on Literacy**
7 The Nature of Language
9 The Cognitive Processing of Language
11 The Context of Language Use
12 The Functions of Literacy
15 Literacy in the Context of Postsecondary Education

18 **Programs for Improving Literacy**
18 Program Rationale
19 Determining an Appropriate Curriculum

26 **Process Outcomes**
26 Instruction
27 Institutional Support and Organization
28 Evaluating Students and Programs

32 **Toward the Year 2000**
32 The Need for Acceptance
32 A Framework for Understanding Literacy
33 Facing Practical Realities

35 **Bibliography**

Foreword

There are several factors that have changed the characteristics of students attending higher education institutions. First was the effort to make higher education more available to a greater number of students. Equal educational opportunity provided the way for students with a wide and varied cultural and academic background to attend college. A second change was caused by the Women's Movement—women began to go to college in greater number and to return to college at a later age after having children. A third change was the decrease in the growth of higher education and a relaxing of admission standards in order to maintain enrollments.

Many of these new students came to college weak in the basics: reading, writing, and arithmetic. When a large number of students were applying to college, this deficiency was not a problem, for if a student failed out of college, there was always another student ready to step in. Today, with institutions competing against each other for student enrollment, it has become increasingly important to attempt to ensure that a student who enrolls an institution, goes on to graduate. As a result, more and more institutions are attempting to establish programs that will help these students correct their deficiences so that they can successfully pursue their academic programs.

It is one thing to set the goal to help students who are deficient in the basic skills, it is quite another thing to achieve this goal. In the 1978 AAHE-ERIC/Higher Education Research Report No. 1, *Basic Skills Programs: Are They Working?* by Mary Kathryn Grant and Daniel R. Hoeber, this topic was addressed. This 1981 report by three educators from Arizona State University—Richard C. Richardson, Jr., director, Department of Higher and Adult Education; Kathryn J. Martens, adjunct assistant professor and coordinator, Literacy Development Project; and Elizabeth C. Fisk, graduate research associate—provides an indepth examination of the question of functional literacy. In order to clarify expectations for underprepared students, the authors help to develop a framework for describing literacy including language, cognitive, and social-cultural competencies. They further clarify the framework by discussing in detail the four components of the definition of literacy: the nature of the *language* involved, the way the language is *processed*, the *context* in which the language is processed and used, and the *functions* of this use in relation to specific goals.

The recognition that developmental programs are now a necessary component of higher education suggests the need for systematic evaluation of these efforts, the preparation of professionals in this area, and institutional flexibility to allow for the design for programs that can accommodate a diverse student population. This monograph succinctly summarizes the major literature concerning literacy and helps to establish a firm foundation to accomplish this goal.

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Overview

Literacy has been defined in a practical or functional sense as the competence to use language appropriately in specific contexts to advance individual and societal goals. Despite the fact that faculty and administrators are occasionally less than enthusiastic about them, college programs teaching literacy skills have existed throughout the history of higher education. Types and purposes of programs have varied according to the different student populations served. In an era of highly selective admissions, it was assumed that students already possessed the necessary basic skills, and programs focused on assisting them to develop adequate study habits. Where higher education has recruited and admitted increased numbers of students, however, colleges have had to reevaluate and expand efforts to develop literacy.

The most significant period of expansion of literacy programs in our current history was brought about by the movement toward equal access for previously underserved segments of the population. The combination of relaxed standards of admission, assistance basd on need, and a genuine commitment to the principles of affirmative action dramatically changed the composition of entering classes. It has become increasingly evident, however, that admitting students and retaining them through completion of a degree program are two very different matters. Current statistics suggest that equity of access is within reach; based on the attrition of minority students, however, equity in degree attainment is much farther away.

As open access continues to be valued and as the pool of traditional college-bound high school graduates continues to decline, it is apparent that many institutions can expect increasing diversity in their student populations. These students will present a challenge to higher education because they will enter without meeting traditional academic criteria.

The programs designed to serve underprepared students are as diverse as the students themselves, but the major emphasis of most efforts described in the literature is on preparing students for "regular college work." This preparation is mainly in reading, writing, and mathematics, although some institutions offer courses in study skills, science skills, and English as a second language. Some programs stress the importance of the affective domain, improved self-concept, and counseling. Individualized instruction is emphasized, and learning assistance centers are becoming popular additions to college programs.

Given the diversity of students, purposes, and programs, it is not surprising that evaluations of such programs often lack clear criteria. Most evaluation reports describe student success in terms of how many completed the course, course grades, and grade point average. Little of the information from these reports is useful in recommending the design of literacy efforts. Obviously, research studies and more sophisticated evaluations are needed.

The prevalence of literacy development programs in higher education means that they will grow in importance as we serve an increasingly diverse student population. Many organizational issues emerge as programs attempt to become more sophisticated. The most important, most difficult, and most widespread is the issue of how we will finance such efforts.

A framework for understanding literacy is much needed. The authors' broad definition of literacy as language competence stresses that language is used appropriately to achieve both individual and societal goals. From this perspective, literacy has both functional and symbolic dimensions. The functional dimension involves the specific competencies required to perform in the occupational field for which an academic program prepares students. The symbolic dimension relates to those cultural attributes that are valued as ends in themselves. The symbolic dimension confers status but may not be essential to occupational performance.

This distinction strikes at the core of arguments about the nature of higher education. The question of what it means to be educated and the eternal issue of general versus special education are inextricably interwoven with the concepts of symbolic and functional literacy. Students' preferences are often clear. They will endure the general to earn the opportunity to learn the specific. Clearly, many screening courses in the arts and science departments that define functional literacy establish requirements that exceed the expectations of subsequent courses. Proposals to change symbolic requirements are attacked as a pernicious dilution of educational quality.

This monograph provides no answers to these issues. While a social responsibility exists for supporting the objectives of equal access and equal opportunity for academic achievement, at the same time the necessity exists for many institutions to recruit underprepared students in order to preserve enrollment levels. While necessity may be less praiseworthy than philosophic commitment, the outcome in terms of responsibility for those admitted is comparable. Resources are scarce and underprepared students are likely to be more expensive to serve. Ultimately, our central concern is to encourage acceptance of the risks involved in serving high-risk students.

Literacy and the New Students

The arrival of a new type of student in higher education—students who do not meet traditional standards for college attendance in terms of test scores and history of academic success—is expected to have far-reaching consequences for higher education (Cross 1971). These students are beginning to compose a significant portion of the student population because of special admissions programs and the trend toward open admissions in four- as well as two-year institutions. The presence of these students presents a challenge to higher education because they do not fit the student characteristics on which so many policies are based.

As the pool of potential college and university students declines (as all predictions seem to indicate that it will), it is reasonable to assume that institutions will enroll increasing numbers of students who do not meet traditional standards for admission. The Carnegie Council's final report (1980) stresses the obvious: We can expect significant declines in the traditional student population in the 1980s and beyond. The impact of these declines on total enrollment for many institutions will depend on the institutions' willingness to accept and serve an increasingly heterogeneous student population. Students predicted to enroll in increasing numbers include adults age 25 and over, women, minorities, and part-time students. While it is not correct to suggest that all of these students will fail to meet traditional criteria for admissions, the Council's prediction that "one half of the students in the classrooms of the year 2000 would not have been there if the composition of 1960 had been continued" (*Chronicle* 1980, p. 11) suggests a substantial number will have deficient literacy skills.

The challenge of a diverse student population is itself not new, but the climate of the times may now support a more serious acceptance of that challenge. A significant number of incoming students have always failed to meet criteria for literacy skills, background knowledge, goals, sociocultural values, and motivation for attending college. The responses of institutions of higher education to such nontraditional students have varied over time, especially in regard to the provision of special educational services largely focused on the development of literacy skills.

Historical Perspective

Educational programs in basic literacy skills are not new to higher education; they have been a factor throughout its history. Such special educational programs and services have increased during periods of open admissions and a need for students. At other times, with a surplus of students and the accompanying insistence on higher admission standards, the services have decreased and institutions of higher education attempted to get other agencies to provide preparatory programs. In the 1700s, colleges were often concerned with a basic literacy curriculum, considered today a precollege level of competency. The lack of universal elementary and secondary education meant that those who could not meet the minimum prerequisites for college received instruction in those prerequisites in college. In the 1800s, institutions of higher education promoted the development of high schools to provide the preparatory courses they did not want to provide, but the

increased number of institutions and the need for students in the last part of the century resulted in an increase in the number of college remedial programs. In 1870, only five states did not have preparatory programs in higher education (Rudolf 1965). In 1900, Harvard, Yale, and Princeton reported that over half the new students could not meet minimum requirements, and in 1915, 350 institutions of higher education reported having departments concerned with preparatory courses. Remedial reading courses were also becoming common (Maxwell 1979).

But after 1920, existing four-year colleges and universities again tried to encourage other institutions to provide remediation services. The growth of community colleges was encouraged partially for this reason. In the 1930s, the University of Minnesota established a separate General College to handle underprepared students (Maxwell 1979). In the 1940s and early 1950s, the large influx of veterans, many of whose education was deficient, induced institutions to hurriedly establish various sorts of remedial services.

During the late 1950s, however, the developing federal influence and the large pool of potential students resulted in institutions' concentration on high standards and their neglect of remedial education. Although large numbers of students (approximately 380,000) who entered college failed each year, the level of attrition seemed to concern no one (Pitcher and Blaushild 1970).

Remedial services of that era consisted primarily of a few courses in study skills to assist students with their college work. Because these courses were based on the assumption that students had the necessary literacy skills but inadequate study habits, they were geared at a college level and were brief, voluntary, little publicized, and noncredit. Students took them while pursuing a regular course load (Cross 1976).

By the late 1960s, federally funded programs, especially those sponsored by the Equal Educational Opportunity Program in response to the needs of minority students, and open-admissions policies were responsible for the influx of students with substantial problems in coping with course work (Gordon 1975; Gordon and Fahrer 1976; Gordon and Wilkerson 1966). The colleges' first response was simply to increase the availability of the same sort of courses stressing study skills or reading efficiency popular in the 1950s (Bynum et al. 1972).

These programs, however, were based on colleges' and universities' implicit assumptions about the meaning of equal opportunity and open access: The only minority students who should be guaranteed open access were those who could profit from the experience because they had the "substantive" qualifications of knowledge, skill, and character habits necessary for college (Heslep 1976) even though they might not demonstrate the "indicator" qualifications of standardized test scores and high school grade point average (Henderson 1971) and even though such indicators are not accurate predictors of academic achievement for nontraditional students (Davis and Welty 1970; National Urban League 1970). All the institutions needed to do to protect the right to educational opportunity was to relax their insistence on these indicator qualifications as entrance requirements.

Once admitted, students were on their own except for the help of the existing courses in study skills (Greising 1969).

The concept of open access, however, has been changing to include students who do not possess even these indicator qualifications for college study. Some argue that colleges cannot look passively on as large numbers of students drop out. According to this view, students deserve more than initial access; they must have a fair chance to profit from higher education, which implies adequate financial aid, academic support, and counseling. This argument has a practical side as well: It has become necessary to reduce attrition as the pool of high school graduates diminishes.

Definitions

Changing perspectives on literacy programs and services are reflected in the changing terminology used to define a college's efforts.

Remedial education is the term most frequently used to refer to programs for underprepared students. Programs designed to remedy students' deficiencies so that they may enter a program for which they were previously ineligible fall in this category. (Roueche and Wheeler 1973). The program focuses on providing basic or academic skills, usually through the process of diagnosing students' deficiencies and prescribing specific learning experiences to remedy those deficiencies.

Although the term *compensatory* is less popular in current literature, (Clowes 1980), compensatory programs are still part of higher education. Such programs also address the remediation of deficiencies, but deficiencies are seen as the results of deprivation or disadvantages in the student's sociocultural environment. Compensatory programs attempt to offset environmental disadvantages by focusing on social and personal growth as well as the development of academic skills.

Developmental education has recently become a popular term although it is the least clearly defined of the three. In contrast with remedial and compensatory education, developmental programs do not focus exclusively on preparation for college programs. The intent of a developmental program is to meet students where they are and take them where they want to be by teaching both academic and human skills (Roueche and Snow 1977). They attempt to emphasize individual strengths rather than weaknesses in students' backgrounds, assisting students to become fully functioning adults and preparing them to make choices appropriate to their current state of development (Clowes 1980).

The distinction in terminology is most useful when it identifies the purpose of a program. "If the purpose of the program is to overcome academic deficiencies, I would term the program remedial.... If, however, the purpose is to develop diverse talents of students, whether academic or not, I would term the program developmental" (Cross 1976, p. 31).

Diverse Students and Purposes

Part of the confusion over definitions and program purposes is related to the failure to recognize the various subgroups of "underprepared students" and

the overlap of underprepared students with other "nontraditional" groups, including minority, older, female, and handicapped students (Emond 1976). Those categories that require separate consideration in educational planning include:

- Students who meet standard indicators of achievement necessary for college-level work but who need help in refining study, test-taking, and reading skills.
- Students who already have the potential for college-level work but cannot demonstrate this ability on standard measures of achievement. This group may have had much of the necessary educational background and possess most of the required literacy skills and knowledge but need help filling the gaps or reviewing work done some time ago to transfer to college work.
- Students with most of the necessary literacy abilities and background but poor self-concepts, a lack of self-confidence for college work, and a lack of familiarity with the normal college environment.
- Students with normal ability to learn but different cultural backgrounds who learn best in ways not typically included in college programs.
- Students with normal ability to learn but without a background that would provide skills and knowledge expected for entry into college programs. They would require extensive training in precollege programs.
- Students who do not speak English as a native language and therefore need to gain proficiency in English.
- Students with learning disabilities or handicaps who may never be capable of certain types of college work.

The common denominator in all categories is the absence of or inability to use certain literacy skills critical to academic performance. The failure to precisely define these missing skills has led to the development of a variety of approaches whose frame of reference is classes commonly offered to "traditional" students. Even though the literacy skills needed to master the standard courses vary according to the institutions where they are offered and the standards of the faculty who teach them, the failure to define literacy requirements of standard courses has contributed to the lack of success of remedial programs.

This failure is part of a larger problem: the lack of consensus in a clear definition of literacy in the context of higher education. Scholars are also apparently reluctant to consider the implications of research on literacy in the design of efforts to develop students' literacy skills. It is therefore useful to review what we know about literacy from available research.

Research on Literacy

Literacy can be defined as an individual's ability to process language in order to fulfill functions that have short- and long-term consequences for the individual and for society. Policies involving issues of literacy and its development are adequate only when all components of this definition are considered: (1) the nature of the *language* involved; (2) the way the language is *processed;* (3) the *context* in which the language is processed for use; and (4) the *functions* of this use in relation to specified goals.

The following sections discuss these four aspects of literacy, explaining first what would be entailed in an adequate description of each and then what each aspect can contribute to an overall concept of literacy. A final section summarizes this theoretical framework and demonstrates its applicability to issues of literacy related to instruction and policy making in higher education.

The Nature of Language

While most discussions of literacy have focused on written language, a recent trend has expanded the term's use to include oral language as well, motivated by the realization that all communication skills have similar characteristics, that all language skills are essential to survival in our society, and that most language activities involve both oral and written language. Sophisticated approaches to the description and analysis of language have been developed within the field of linguistics, but most studies of literacy—including both assessments of literacy skill and surveys of literacy habits—have not exploited the available descriptive techniques. Studies assessing literacy skills, which have focused almost exclusively on reading skills, selected or designed the language for their tests on the basis of implicit notions about the language that the average adult in our society should read (National Center for Health Statistics 1973; Coleman et al. 1966; Louis Harris and Associates 1972; National Assessment of Educational Progress 1975). Studies surveying literacy habits have tried to learn what types of language are most commonly used. Studies of adults' reading habits, for example, have a long history (Gray and Munroe 1930; Waples 1938; Link and Hopf 1946; Bogart 1952 cited in Gray 1960) and have been reviewed by numerous others (Berelson 1949; Asheim 1956; Gray and Rogers 1956; Gray 1960; Robinson 1980; McEnvoy and Vincent 1980; Mikulecky, Shanklin, and Coverly 1979). Reading and writing habits and oral and written literacy have been surveyed (Murphy 1975; Northcutt 1975). The results of these surveys, however, have usually been expressed in very general categories of language content.

In contrast to the general descriptions resulting from most research, some recent studies of literacy have focused on specific situations and have collected actual samples of the language materials respondents reported using. Researchers have attempted to describe the language in these materials in some detail (Sticht 1975; Mikulecky and Diehl 1979; Scribner and Jacob 1980; Heath 1980). Still, researchers and educators are only beginning to take advantage of the procedures for analysis developed by linguists, which can potentially contribute the detailed descriptions of language

necessary for an adequate understanding of literacy. The levels of description developed by linguists may be useful in completing a picture of language and judging the relative difficulty of various language samples. Although researchers and educators will want to be aware of all levels of linguistic description, the detail needed at each level will depend on the circumstances of and the purposes for the description.

The most basic level of description of language concerns the physical representation of the message—the sound sequences of oral language and the accompanying stress, rhythm, pause, and intonation, and the graphic sequences of written language, which have visual cues to meaning expressed in spacing, punctuation, and type.

A second level is the lexical, or the level of word meaning. Descriptions of language at this level are far more complicated than one might assume. Much is unknown about the ability to comprehend words. Vocabulary skill is not just the result of accumulating isolated lexical units; it is rather a "direct measure of the knowledge we possess, structured in the mind in an intricate conceptual web" (Mellon 1977, p. 13). Oral and written language can be described as a level of vocabulary on the basis of word counts, but this method is not accurate because of the interconnected sets of meanings invoked by the material in the mind of the reader or listener.

At a third level, language can be described in terms of syntax or grammatical structures. Several well developed systems exist to describe the complexity of sentence structures in a language sample (Hunt 1965; Loban 1976; Golub and Kidder 1974), and research has shown that more difficult language is often more syntactically complex (Takahashi 1975). An observed developmental increase in the syntactic maturity of people's writing and speaking (Brown, Cazden, and Bellugi-Klima 1969; Chomsky 1969; Lawton 1963; McQuade 1978) is related to the ability to vary syntax appropriately with the purpose for which language is used (Mellon 1977). Descriptions of syntactic characteristics can partially account for the distinctive quality of oral and written language (Devito 1967; Harrell 1957; Horowitz and Newman 1964; Poole and Field 1976) and of writings within various disciplines and cultural contexts. Problems of literacy arise when individuals cannot deal with syntactic characteristics different from the syntax of language they are most accustomed to using.

Language has structure at levels above that of a single sentence or proposition, however, and analyses of the lexical or syntactic levels of language, no matter how sophisticated, remain incomplete and ambiguous unless seen as part of a more complete sample of oral or written language as it is actually being used. A consideration of the structure of an entire text or discourse, a fourth level of describing language, is proving to be essential to an understanding of both oral and written language. Lower levels of structure are considered as constituents contributing to and determined by the more fundamental qualities of the whole. It is at this level, where the whole is observed, that differences between oral and written language can best be seen and the uniqueness of language contents from various disciplines and functional context can best be described (Basso 1974; Huddleston 1971;

Lackstrim, Selenker, and Trimble 1973). Cross-cultural differences in language content at this level have important theoretical and practical consequences (Kaplan 1972). Students' problems with literacy—especially minority and other nontraditional students—may stem more from their unfamiliarity with the structure of formal lectures and textbooks than from their struggle with vocabulary and syntax. When students do not follow the overall organization of the context, individual statements are difficult to comprehend and retain.

Even at the fourth level of analysis, however, meanings of language contents remain unclear without reference to the circumstances of their use. Recently, sociolinguists have criticized naive understandings of the nature of language presuming that meanings are in words and that linguistic form defines the nature of communication. Cognitive sociologists and anthropologists often treat language content as a form of glossing (Garfinkel 1967). The meanings of words and expressions depend upon how they are used, not solely on their linguistic structure. As they have continued their attempts to describe language, linguists have come to realize that language contents must be studied in use.

The study of literacy can profit from this realization of the limitations of linguistic analysis. Although detailed descriptions of language content are still considered essential and although new analytic techniques are being devised to describe functional language materials (forms, contracts, and information pamphlets, for example), this analysis of materials needs to be used in conjunction with information about how these materials are used (Thomas 1980). Simple linguistic descriptions of language must be augmented in three ways to understand literacy: (1) a consideration of cognitive tasks involved in processing language; (2) the real-life contexts in which language is used; and (3) the function of language and what consequences, as used in these contexts, it has for individuals and society (Heath 1980).

The Cognitive Processing of Language

The cognitive activities involved in the use of language are excedingly complex.

> *Modern psychological investigations have revealed that reading—particularly skilled reading—is, in fact, a complex form of information gathering, sorting, interpretation and analysis.... The study of reading processes has begun to shed light on more basic kinds of human activity—attention, perception and thinking itself. (Wolf 1977, p. 412).*

The cognitive processes of written language also are complex.

> *Putting something into words requires us to work—observing, sorting, weighing, measuring and finally choosing the threads we will follow out of the tangle of impressions. And the act of articulation... commits us to an understanding of experience, puts us in touch with our world in a way peculiar to the naming of it. (Simpson 1978, p. 939).*

Cognitive psychology and psycholinguistics contribute the description of the processs involved in the use of language to the framework for a discussion of literacy. Hierarchies of language skills have been developed that generally move from the levels of simple recognition and reproduction to levels requiring more cognitive work, including for example the manipulation of the content and the use of background knowledge to draw inferences.

Comprehension of written and spoken language is considered a high level of processing occurring only after receivers have integrated the information expressed in language into their own conceptual system (Anderson 1972; Bormuth et al. 1970). When comprehension occurs, inferences can be made, main ideas and principles can be derived, and knowledge gained can be applied in novel situations. All tasks associated with the comprehension of language are not equally difficult. Demands vary according to the sophistication of the reader's or listener's existing conceptual system and the degree and complexity of the process necessary to introduce new oral or written information into the conceptual system. The less the presentation of new information resembles the existing system, the more difficult and involved comprehension is.

Related to the skill of comprehending language is the process of composing language, which involves movement from one's conceptual system to a representation in oral or written discourse (Hayes and Flower 1978). Composition then, necessitates the use of conceptual skills. One must be able to store and retrieve information from long-term memory (the planning stage) and then provide the language that reveals the conceptual organization of one's ideas (the translating stage).

While comprehension and composition may seem to be the goal of most language tasks, it is important to remember that literacy also involves metacognitive skills—those problem-solving skills that require individuals to think about their own thinking and use of language. Metacognition can be thought of as a sort of "executive" functioning (Brown 1977) and may be close to our common sense notion of what constitutes intelligence. When psychologists study learning to learn and when educators teach study skills, they are concerned largely with metacognitive skills.

Subcategories of metacognition include prediction, estimating the difficulty of a task in relation to one's capacity to perform it, planning, and monitoring one's cognitive activities. The teaching of metacognitive skills may be the most direct and effective way to help students improve their literacy. Metacognitive skills are necessary for efficient, selective reading (Flavell 1976; Baker and Stein 1978; Schallert, Kleinman, and Rubin 1977) and for the constant monitoring of comprehension that tells readers when to reread or to read more slowly (Baker and Stein 1978). Case studies of the composition process reveal the importance of metacognitive activities such as prewriting, planning, reformulation, and reflection in improving composition skills (Emig 1971, 1975; Stallard 1974; Graves 1975; Mischel 1974). In fact, engaging in composition may in itself have an impact on the development of metacognitive skills.

While some educators advocate sequential teaching of skills at each level of processing from recognition and reproduction to comprehension and metacomprehension (e.g., Bloom 1956; Gagne 1977), others feel that all levels of skills should be taught in an integrated, holistic way to parallel the language tasks of everyday life (Gutknecht and Keenan 1978; Mason et al. 1977; Chaplin 1977). Any given language task will involve to some degree all levels of cognitive processing, though the extent to which each level is involved and the manner in which the levels are integrated may account for the relative difficulty of various tasks. In addition, the same language tasks will not be equally difficult or require the same levels of processing for every individual. Individuals bring to the task their own background knowledge and experience with language, which may either facilitate or confuse their ability to compose and interpret language appropriately.

The Context of Language Use

A study of literacy requires some attention to aspects or components of language activity other than the content and processing of language—the setting of the use and the roles, statuses, and purposes of the participants. The use of language must be seen within the overall and ongoing activity of a specific setting so that its significance can really be understood (Scribner and Jacob 1980). Such a contextual analysis allows one to see a single instance of uses as an alternative to some activities and as a complement to others (i.e., to see its "paradigmatic" and "syntagmatic" relationships).

Observing the concurrent occurrence of various aspects of the context in which language is used leads to the formulation of hypotheses about literacy. For example, the choice of a written channel of communication might be related to certain types of settings, relationships of status, or purposes. The same statement may have different meanings and purposes depending on the setting or on the roles of speakers and listeners. Such hypotheses are essential to an understanding of what literacy and language competence mean, because testing the hypotheses will provide detailed information about the appropriate use of language in specific situations. While linguistics provides the description of language and cognitive psychology the analysis of language processes, other disciplines (including sociolinguistics, sociology, and anthropology) provide the perspective for a consideration of the context of use.

Anthropologists have conducted long-term observational studies of literacy in natural settings. This research already has led to insights about the multiple meanings, functions, and use of literacy. It provides the sort of detailed, contextual information about uses of literacy that both practitioners and researchers need. A five-year ethnographic study of literacy in the homes of working-class families, for example, found that family members use literacy in ways very different from those usually discussed for more academically oriented populations (Heath 1980). Results of this study show that in the lives of these working-class people literacy is "highly contextualized" and that reading and writing are usually "social events" related to a specific task. A current study of written language that uses long-term obser-

vation, interviews, and analysis of documents and forms is investigating how individual workers carry out their jobs and how "prescribed" and "invented" uses of written materials enter into job activities (Scribner and Jacob 1980). So far, researchers have found that every occpuation studied involves reading and writing but that any one written document may play different roles in different job activities. Because reading and writing are so integrated into ongoing tasks, the researchers have found that people did not at first report much of the reading and writing they do.

A three-year ethnographic study of literacy in a community college is examining the ways literacy is used inside and outside the classroom as well as the way literacy is affected by and affects administrative policy (Richardson and Martens 1980). The researchers have found most acts of literacy to be multimodal (i.e., the most important information is both heard and read, spoken and written) and, as found in the Scribner and Jacob study, to be so much a part of routine tasks that they are not at first easily identified.

The Functions of Literacy

Levels of function. The study of context is especially important when considering the functions of literacy, the consequences of language use. A clear understanding of the functions of literacy is essential when making evaluative or prescriptive judgments about literacy skills.

Functions can be considered at several levels:

1. At a basic level, literacy has the functions of communicating information, expressing emotion, and establishing contact with others. It also has directive functions, such as persuasion, ordering, and requesting (Hudson 1980; Hymes 1964).
2. At a less molecular level, literacy can be seen as helping to accomplish specific *tasks.* This is the level most often used in discussions of "functional" literacy.
3. Although most studies of literacy emphasize this functional literacy, literacy also entails using language to learn and to learn to learn (Sticht 1975). Recognizing the dynamic nature of using language for learning can keep definitions of literacy from becoming narrowly focused on immediate and perhaps ultimately trivial functions.
4. Finally, from a broader perspective, literacy can be viewed as functioning to promote larger goals and values of a society. It is at this level that the prescriptive connotations of the word "literacy" become most evident.

> *Employing a naturalistic approach to the definition of literacy misses the point that this definition must serve as a goal statement, a statement of what literacy skills a person ought to have.... We are formulating an ethical judgment that society's value would be best served if its members acquired a particular set of literacy skills. (Bormuth 1975, p. 66).*

Other disciplines—political science, economics, history, law, business,

and education—become important in the exploration of functions of literacy in relation to the goals of individuals and societies. Historians, for example, have long been intrigued with the possible connections between literacy and the development of civilization. Changes in literacy have been associated with various historical trends. Some feel that changes in the distribution of high levels of literacy have significantly affected social, political, and economic development (Schofield 1973; McClelland 1966; Schuman, Inkeles, and Smith 1967; Bailyn 1960; Cremin 1970; Eisenstein 1980). Others have questioned the connection between literacy and socioeconomic change (Lockridge 1974; Sanderson 1972; Soltow and Stevens 1977). Some studies have found, for example, that even when societies valued proficient written language, its actual use was often highly circumscribed and its overall impact minimal (Heath 1980).

Politicians have often linked literacy to matters of national strength and patriotism (Wallbank, Taylor, and Bailkey 1972). Literacy may have been promoted in the United States to ensure that a unified, loyal citizenry emerged from the diverse population of immigrants (Diehl 1979). Literacy also has been linked to democratic potential (Fudge 1974). Because it was felt that literate citizens were better able to make political and economic decisions, educating citizens to ensure their literacy was viewed as a way to put the "tool of progress" in people's hands (Baker and Escarpit 1973). In international politics, the literacy of developing third world nations has been a highly charged topic; campaigns to ensure literacy are approached with missionary zeal as if they could, by themselves, bring prosperity and a higher quality of life to oppressed and "underdeveloped" people.

Economists view literacy in terms of cost-benefit analysis, asking how expenditures to develop literacy match changes in the gross national product. At a less broad level, individual employers have an interest in assessments of literacy as a way to facilitate the hiring and placement of effective workers. Beginning with the expansion of industrialism in the late 19th century, they have promoted literacy training as a way to maximize workers' effectiveness.

Sociologists consider the relationships among literacy, social status, and social mobility. Exaggerated claims for the socioeconomic functions of literacy for the individual have been made, including "the ability to hold a decent job, to support onself and...family and lead a life of dignity and pride" (Harmon 1970, p. 227). Others doubt the time-honored expectation that the development of literacy leads to economic security and social mobility (Heath 1980; Diehl 1979; Jacob and Crandall 1979). For example, in 18th century New England, distinctions in occupational status were neither created nor reinforced by substantial differences in literacy (Lockridge 1974). And in 19th century England and Scotland, the causes, purposes, and consequences of literacy varied and were not always clearly beneficial to the individual (Sanderson 1972; Stone 1969).

Task-related and symbolic function. The consequences of literacy are sometimes connected to the task-oriented ("functional") consequences of

literacy. For example, possessing literacy skills that are actually important to completing job-related tasks may be related to occupational success. However, so-called "symbolic" functions of literacy have also been recognized. Although they have not always been viewed as legitimate "real" functions of literacy, symbolic meanings of literacy influenced by current social and political ideals have real consequences for individuals. Occupational status, for example, might be symbolically linked to literacy so that individuals must have high levels of literacy to fill prestigious positions even though the job tasks themselves may not actually require advanced levels of literacy (Jacob and Crandall 1979; Fudge 1974).

An employer's argument in favor of strict literacy requirements for jobs probably involves heavy use of the symbolic meanings of literacy.

> *The argument would be that if a student did not acquire literacy, he also probably did not acquire math skills, social skills, skills needed to work for someone else, skills needed to continue learning and advancing, etc. No company would want to hire such an individual, even if the job required no reading and writing at all (Diehl 1979, p. 41).*

Symbolic meanings of literacy come about because of the frequent association of literacy with other factors. Being literate, for example, is often associated with having knowledge. In fact, the second definition of literate offered in the American Heritage Dictionary is "knowledgeable, learned." In the Age of Reason, literacy came to be associated with the discovery of truth (Diehl 1979). But this connection between high levels of literacy and knowledge should not just be assumed. The way people gain specialized knowledge in everyday settings must be investigated to see the role that literacy plays in this process.

Literacy is also associated with general cognitive competence. It has become a sort of "badge of ability" (Sennet and Cobb 1973). A person who can read and write well, for example, is assumed to think well. This view may be partly the result of hypothesis that the use of written language has altered man's thinking and made it more logical, explicit, abstract, and analytically powerful (Olson 1975, 1977; Havelock 1976; Parry 1971; Goody and Watt 1968; McLuhan 1964).

Some researchers, however, on the basis of their cross-cultural studies, do not uphold this view of the connection between written language and higher levels of thinking (Cole and Scribner 1977; Philips 1972; Scribner and Cole 1973; Heath 1980). The focus of the 19th century on literate activity associated with religious and patriotic goals, for example, may not have promoted high levels of thinking because it stressed memorization and reinforcement and consolidation of the familiar (Diehl 1979; Resnick and Resnick 1977). The functional literacy being advocated appears to stress the gaining of specific information for specific tasks and so may also be associated with rather low levels of cognitive skill.

Related to the association of literacy with knowledge and with cognitive competence is a more value-laden association with culture and refine-

ment—literacy as the hallmark of a civilized person in a civilized society (Diehl 1979; Fudge 1974; Olson 1975, 1977). The term "literacy" is also closely related to the term "literary" as related to literature and creative writing. Some historians and cultural anthropologists make a similar connection of literacy with cultural advance for entire societies (Wallbank, Taylor, and Bailkey 1972; Toynbee 1947; Olson 1975).

Literacy is also associated with the acquisition of society's established value system. Studying public schools in 19th century America, Soltow and Stevens (1977) questioned whether or not the schools taught reading skills at levels that made a difference in terms of occupational needs. They felt that the schools did teach students the values and social norms of behavior normally associated with literacy and, as a result, the students gained some social mobility.

Earlier, when reading the Bible and other religious texts was the focus of the development of literacy, literacy even became associated with being religious, morally good, and worthy of salvation (Diehl 1979). Today, vestiges of this symbolic meaning of literacy may be seen in the low moral status often attributed to illiterates. Literacy tests have sometimes been abused as ways to separate out undesirables (Diehl 1979).

Perhaps because of these symbolic meanings, literacy is associated with higher status in society. This association may be unfair to individuals and nonresponsive to society's needs. Civil rights advocates, lawyers, and lawmakers interested in equal opportunities in employment and education, for example, have questioned the appropriateness of using literacy screening tests without accurate knowledge of the actual literacy requirements of job and school (Sharf 1977; Mikulecky and Diehl 1979).

Literacy may have functions that benefit the state at the expense of individual rights, especially when literacy is used as a sorting mechanism for the distribution of privileges (Diehl 1979). Some of these sorting functions have been dropped, such as voter literacy tests and in some cases college entrance requirements. But this change may have caused a conflict for those with vested interests in the long-established sorting of statuses. This conflict may have led to the recent stress on minimum competency and functional literacy testing.

To gain a clearer picture of both the task-related "functional" and symbolic consequences of literacy, more careful, contextual, and longitudinal studies are needed of the role of literacy in the lives of individuals as well as honest and thorough evaluations of educators' and employers' current practices regarding literacy.

Literacy in the Context of Postsecondary Education

Literacy, considered as the competence to use language appropriately in specific contexts to further individuals' and society's goals, is a central concern within higher education, where implicit assumptions about the nature of literacy figure in many aspects of policy making. These assumptions need to be examined because the policies on literacy involved in remediation, admissions, and the design of curricula have become linked

with the controversial issue of providing equal opportunity while maintaining academic excellence.

The examination of literacy in higher education requires a conceptual framework based on a number of disciplines. Linguists provide the prospective for a consideration of the language that can be used will by literate individuals. This "literate" language can be described at a number of levels—the orthographic or phonological, the lexical, the syntactic, and the discourse as a whole. Information about language can be used in a number of ways. The language used by incoming students can be compared to the oral and written language they have to comprehend and compose in courses to systematically identify underprepared students. This sequencing of language content can be individualized according to the student's background and to the specific coursework he or she plans to undertake.

Careful descriptions of language can be helpful in areas of the curriculum other than programs designed for the underprepared. Comparisons of language contents across sections of the same course and through recommended sequences of courses and programs of instruction can reveal inconsistencies that can be potential sources of literacy problems for all students. Language contents demanded in courses can be compared to the language contents that students are expected to be capable of using upon completion of their degrees. These comparisons may reveal that the instructional language used in courses is appropriate, too easy, too difficult, or just different from the functional language that will be required of graduates.

This linguistic analysis of language contents makes an important contribution to evaluating literacy policies and designing programs to devlop literacy. However, it is equally important to consider a psychological perspective on how the language is processed and used during actual instruction. To design realistic preparatory programs, instructors of remediation courses should be aware not only of the materials their students will encounter in their later coursework but also how they will be required to use them. The same content can vary in difficulty depending on how it must be used. For example, two instructors may use the same text, but one may require only simple skills of recognition while the other may demand high levels of memory, synthesis, and inference. As they proceed through their program of study, students may succeed in oral participation until they encounter an instructor who asks for different types of speaking, perhaps entailing more evaluation or documentation of opinions. Instructional programs may use materials similar to those required in the professions for which students are preparing, but the courses may require a very different use of the materials so that graduates, although familiar with the language contents of their chosen occupation, may still be unable to meet the demands of its language.

The description of both language content and language processing is essential but not sufficient for an understanding of problems related to literacy. It is also necessary to look at the functions of literacy: what purposes are being served and what consequences are resulting. The first step in a functional analysis is to look in detail at the physical and social context of

the use of language in higher education. When we can associate certain categories of language use with certain types of classroom and nonclassroom settings and with particular roles and status within the classroom and the institution, we will be better able to explain the nature of literacy in the context of higher education. Honest appraisals of the context in which literacy is used can lead to an understanding of how literacy is functioning or not functioning in the college environment. Instructors and administrators need to know how well literacy is functioning to communicate information and to direct students regarding course and institutional requirements, and to decide whether present levels of literacy are allowing students to learn and to communicate to their instructors what they are learning. Support staff need to know whether literacy is functioning to establish the social support systems for students.

Literacy might also have a symbolic function in the institution in assigning status to individuals and "programs of study." For example, the best interests of students and the institution would suggest that both the symbolic and the functional consequences of lowering or changing the literacy requirements of a given course should be considered. Changing the requirements for literacy may have positive functional consequences. Some students who could not previously have met the literacy requirements of the course are able to develop the skills and knowledge that the course was designed to teach. However, if the original literacy requirements of the course were symbolically rather than functionally linked to higher status in the institution and society, the change may not promote the social mobility of students unless society's attitudes toward literacy also change.

Developmental programs may have to take into account symbolic as well as functional consequences of literacy as they relate to students' goals. Some programs demonstrate an implicit awareness of symbolic literacy by developing the "good" attitudes and habits normally associated with literacy skills. However, more open discussions of the symbolic meanings of literacy are needed. Such discussions, occurring within programs designed for the underprepared students as well as in the institution as a whole, would help to make these symbolic meanings of literacy more explicit.

Programs for Improving Literacy

Traditional ideas about what reading, writing, and listening skills competent students need can be questioned in terms of the reasons for the assumptions the definition of literate competence in higher education, the reason for that definition, and our desire to let the present situation continue. A review of literature published during the past decade is a sobering experience for those who believe the phenomenon of remediation was largely a problem of community colleges. Many of the most prestigious four-year colleges and universities in the nation are as concerned about the literacy of their students as are the two-year institutions.

Program Rationale

The rationale for the educational programs designed for underprepared students, now termed developmental studies, has been changing in several important ways since the first courses teaching study skills were instituted. First, institutions have increasingly accepted a responsibility for teaching precollege level work and a willingness to deal with educational deficiencies of adults whose literacy skills are far below college level (Anderson and Gray 1977). This new role has been accepted even though it necessitates a far greater commitment of time and resources (Kaplan 1972).

Second, institutions have recognized the qualitative differences in students' learning patterns and become reluctant to "attempt to fit all students into the same educational mold" (Henderson 1971, p. 24). This new rationale advocates more flexible, individualized programs, including changes in the necessary level of literacy demanded. Students are given extra time to finish requirements, the opportunity to retake exams, and the option to receive nonpunitive grades. Alternative learning styles and preferences for differing modes of literacy are accommodated (Bynum et al. 1972; Appalachian State University 1977; Rosen 1974).

Third, the new programs are paying more attention to educating the "whole" person (Bynum et al. 1972; Larson and Olswang 1975). Fostering a positive self-image, which underprepared students because of their background of academic failure are less likely to have, is emphasized (Bourn 1977; Morrison et al. 1975; Young 1977). Recommended program goals also include promoting greater "internality of locus of control" (Roueche and Mink 1976), fostering positive attitudes toward the program and education in general (Cavin et al. 1976), and setting more realistic goals (Ohio Board of Regents 1974).

Finally, developmental studies are no longer limited to achieving eligibility for regular college programs (Roueche and Snow 1977; Cross 1976). Programs of study would take students from where they are closer to where they want to be, using a "value added" criterion for success (Karabel 1972). In line with this view, Cross (1976) advocates a "pluralistic" approach to education that is individualized with regard not only to the learning process (time, methods, and materials) but also to the objectives of the program. Goals would reflect individual sets of needs and aspirations (Clark 1976).

It has also been suggested that the "pluralistic" model be extended to all students and all curriculum areas (Cross 1976; Roueche and Snow 1977;

Appalachian State University 1972; Whiting 1969) so that "all students in all classes would be carried to their highest level of competence" (Puig-Casauranc 1974, p. 1). According to this suggestion, special developmental classes and instructors might not be needed. All students could enroll in the same courses but could set goals appropriate to their skills and needs. Although this proposal has been made, no one has adequately discussed its implications for the faculty, curriculum design, testing, grading, or institutional organization.

Assumptions about the nature of the students to be served lead to decisions about the purposes or goals, the curriculum, and the instructional approaches of the literacy development program. The program may seek to increase the effectiveness of students currently enrolled in college courses, or it may seek to make previously unqualified students eligible for college work. It may also provide alternative ways of meeting the objectives of regular college programs or help students meet individual objectives that may be unrelated to the regular program.

While the distinction between remedial and developmental programs is important to educators trying to understand college efforts to improve literacy, not all programs define their purposes with as much clarity. Because "remedial" often carries a negative connotation implying deficiencies, "developmental" is sometimes used even if the intent of the program is remediation. Educators may confuse themselves by "lumping" the activities of different approaches under the same "improvised terms" (Clowes 1980). Clarifying the distinction in approaches would assist in articulating purposes and designing programs consistent with those purposes.

Despite the use of a variety of terms and the lack of clearly defined purposes, the emphasis of most efforts described in the literature seems to include preparing the students for "regular college work." What that preparation involves also varies greatly.

Determining an Appropriate Curriculum

Different purposes and different structures of efforts to achieve literacy are obviously reflected in the curricula of those programs. Some are comprehensive programs incorporating specific literacy skills like reading and writing and objectives like improved self-concept. Others focus on one specific skill such as the development of basic arithmetic skills.

The massive and controversial efforts in basic skills instruction at City University of New York (CUNY) instituted in 1969 evolved to include several courses in writing, reading, mathematics, and later, English as a second language (ESL) (Trillin 1980). The University of Wisconsin-Parkside has a comprehensive program requiring that students demonstrate competence in writing, reading, mathematics, the writing of research papers, and library skills (Guskin and Greenebaum 1979). The University of Akron includes counseling and tutoring in its program to teach developmental English, reading, mathematics, and the natural sciences (Hampton 1979). The chemistry tutorial program at the University of Wisconsin-Madison stresses students' cognitive, affective, and socialization needs (Kean and Welsh 1980).

The University of Colorado-Boulder emphasizes verbal skills and sociocultural integration in a summer program for Asian-American students (Takeguchi 1978).

The designation "program" can be misleading because it may not accurately describe an institution's effort in literacy development. Frequently, "program" is used to define the activities of a single department (Hudspeth 1978; Stronck 1978; Denet 1980; Hechinger 1979). In other instances, a number of simultaneous efforts may lack coordination, and one department may even be unaware of the existence of related offerings on the same campus. A large university, for example, may have under the auspices of the student affairs division an equal opportunity program for minority students. Elsewhere in the same institution, operated without coordination or even communication with the student affairs division, may be ESL and remedial writing laboratories operated by the English department and a basic skills program within one or more mathematics and science departments. Descriptions of single programs seldom represent an institution's total effort.

Specific criticisms of literacy development programs are as rare as reports of well designed program evaluation studies. Occasionally one surfaces, however, reflecting the highly ambivalent and sometimes acrimonious attitudes of many faculty members (Kopperman 1978). A number of first-person accounts report the experience of teaching in developmental programs or offer a profile of the achieving student (Larsen 1980; Agress 1979).

Although reading, writing, and a special type of literacy—the ability to use the highly abstract and formalized language of mathematics—are discussed most frequently in the literature, courses in ESL, study skills, human development, development of self-concept, and counseling are stressed on a number of campuses. Some institutions offer courses in specific subjects like chemistry, social sciences, and occasionally humanities and speech. Overall, oral language skills seem to be deemphasized.

Reading. Reading courses for college students are not a new phenomenon. However, with the increased number of open-admission students in higher education, students' reading problems have become more severe, and reading programs have moved from a focus on college study skills to include basic reading. Three problems confront basic reading programs: identifying the reading skills needed in college, assessing students' skills, and identifying students who can reasonably be expected to profit from a basic reading course (Waters 1980).

Many college students, faced with heavy reading requirements, are more interested in improving reading skills than writing skills and often need more than a one-semester course or the tutorial assistance provided. Students fall prey to three types of problems. The first is the problem of the slow, conscientious reader who is often overwhelmed by the sheer amount of reading and who may become more easily discouraged with college. The other two problems are more serious, affecting students described as "recidivists" and the "untaught" (Maxwell 1979). The recidivist is a student

who, after many years of remedial reading help, has grown dependent on the reading teacher because of his or her own lack of confidence. The untaught—the returning adult student who managed to avoid reading in high school—will have much more difficulty.

In describing the work in the CUNY system, Water (1980) identified three levels of deficient skills and described the courses established for students at each of those levels. Students at level one, those needing the most help, were described as having poor decoding skills, a lack of vocabulary, and poor knowledge of affixes and verbs. At this level, a systematic hierarchical approach was used: Students with the same deficiencies were grouped together and taught a sequence of basic skills. Students at this level have extensive deficiencies in writing as well as reading.

Students at level two were identified as needing help with vocabulary and practice with sentence structure. They find college materials difficult and are not ready for rapid reading. Course work emphasizes subject matter, specific vocabulary, comprehension, critical evaluation, and "inspectional reading" (skimming and prereading). Students at this level can work with college material and are enrolled in some regular courses.

Students at level three have basic skills but need to develop flexible reading rates and sophisticated study skills. In the CUNY system, participation in a reading course for students at this level is encouraged, but voluntary. The course stresses such skills as examining the text to find passages relevant to a particular topic, presenting an orderly discussion for class or a paper, and reading at a rate determined by the reader's purposes.

Teaching reading in the context of college subjects is also stressed, as specialized vocabularies and knowledge of the discipline play an important role in comprehension. In some cases, specific courses such as reading skills for the sciences or humanities are offered.

Writing. Adequate writing skills also have concerned faculty for some time.

> *In 1874, when 97% of the nation's high school graduates entered college, the Harvard faculty, distressed by the poor writing skills of upperclassmen, sought to remedy writing deficiencies by instituting freshman English. The original purpose given for the almost universal instituting of freshman English in colleges across the country, following the Harvard model, was to "make up" for what students "failed to learn" in high school. In essence, freshman English is and always has been considered a remedial course (Maxwell 1979, p. 225).*

Today, many colleges and universities have found it necessary to add basic writing courses to the curriculum to prepare students for traditional freshman composition. The numbers involved seem high for selective institutions. At Pennsylvania State University, 28 percent of entering students were described as lacking basic English skills (Hudspeth 1978). This figure is very close to the 23 percent of all pre-sophomore students reported enrolled in remedial courses in the university system of Georgia (Dent 1980). Kirk

estimated that one of two freshmen entering the University of Missouri at St. Louis in the fall of 1979 might need to enroll in a remedial course (1978).

Students have a number of problems with writing, including boredom and frustration. "In the area of English, the high risk student becomes immediately confused in an academic cross-breeding of intransitive verbs, direct objects and possessive pronouns" (Moore 1979, p. 169). Student writing exhibits several problem areas: lack of a strategy for composition, poorly organized papers, lack of introductions, failure to follow directions, failure to proofread, lack of self-management skills, and difficulty in accepting teachers' criticisms (Lanberg 1975). Students in CUNY's basic writing courses were individuals who had never written much in or out of school and who came from families and neighborhoods where the spoken language was either not English or some nonprestigious form of the English language (Shaughnessy 1976).

Given differences in student skills, two problems face instructors of writing: teaching basic writing skills and helping those who have some competence develop skills in writing more formal, academic prose (Maxwell 1979). The response to these concerns in many programs has been to prescribe "writing, writing, and more writing" (Hechinger 1979).

The experience of CUNY instructors led to the establishment of three levels of courses in basic writing (Gray and Slaughter 1980). Such levels would roughly parallel the levels of literacy discussed in the previous chapter. At level one, the least skilled, are the "semicoherent, misspelled, syntactically fractured first attempts of marginally literate high school educated adults" (p. 16). Course work emphasizes building self-confidence and stresses writing as a process. Writing is most often personal, and students keep journals, write extemporaneously, practice hour exams, and criticize others' work.

At level two, course work concentrates on writing analytical essays and often short expository papers in response to reading. More attention is given to the structure of an essay, and grammar is emphasized in responses to students' writing.

At level three, most of the students' writing is grammatically correct but exhibits some problems with semantics, logic, or expression and tone. Written essays at level three increasingly rely on other sources for content, including literary works, critical essays, and information reports. The student is expected to produce a five- to ten-page paper by the end of the semester.

Maxwell stresses the importance of working with all instructors within the college as well as at the high school level. "The job is too large for English departments to handle alone" (1979, p. 254). Such a recommendation supports our previous point that literacy skills should be taught within the context of the tasks in which they will be used.

Mathematics. The increase in remedial mathematics courses can be tied directly to open-admissions policies and increasing numbers of underprepared students. In the 1960s, many colleges and universities instituted calcu-

lus as the entry-level math course for freshmen on the supposition that students would have completed algebra and trigonometry in high school (Maxwell 1979). However, twice as many students failed the CUNY math placement examination as the reading placement examination (Hecht and Akst 1980). Many open-admissions students have avoided or done poorly in high school math classes and thus require remedial course work.

The problems students encounter in the development of mathematics skills are often viewed as complicated. Mathematics is a difficult, complex subject to learn, requiring the ability to think precisely and logically (Maxwell 1979). In fact, it requires an important skill that many instructors complain their students do not have—problem-solving. Mathematical problem-solving can be defined as "deliberate coordination of mathematical knowledge, intuition and previous experience in an effort to determine the solution of a problem, when a procedure for determining the solution is unknown" (Lester 1975 cited in Gimmestad 1977). Gimmestad sees problem-solving as requiring more than just knowledge of mathematical concepts and processes. Trujillo (1978) and Kantowski (1979) distinguish between doing an exercise and actually solving a problem. Only the latter implies understanding, insight, and functional literacy.

Four groups of students in the CUNY system needed remedial mathematics (Hecht and Akst 1980). The first group corresponded to Cross' description of the "new" student in higher education—those scoring in the lowest thrid on nationally standardized tests (1971). Students at this level often have difficulty in other subjects and may have poor study skills as well. Students in the second group are generally capable in other subjects but have difficulty with mathematics. Hecht and Akst note that these students tend to regard themselves as "dumb in math" and ask to be exempted from math requirements (1980). Some, they report, bring notes from their therapists. A third group have had minimal contact with mathematics throughout their high school years, and a fourth, having had mathematics before, mainly need review.

Courses in remedial mathematics usually begin with basic arithmetic to lay the foundation for elementary and intermediate algebra, trigonometry, and some analytical geometry. Mathematics subjects to be included in any remedial program would be selected on the basis of the program's objectives and whether or not they are required as prerequisites for other college programs (Hecht and Akst 1980). Hudspeth (1978) has identified four entry levels for the remedial mathematics programs encompassing two years of mathematics below the level of calculus. Mathematics skills should not be taught separately from other literacy skills. For example, students must have the necessary skills to read mathematics texts. "Math anxiety" courses are also being offered more frequently through remedial or counseling programs.

Self-paced instructional modules known as PSI (personalized system of instruction) are used more frequently in mathematics than in other remedial areas (Cross 1976). PSI includes self-pacing, mastery learning, and the use of peer tutors. Tutoring by peers is fairly prevalent in mathematics

instruction. Some colleges offer math labs or occasionally computer-assisted instruction in mathematics. Individualized instruction is critical in remedial mathematics (Hecht and Akst 1980).

Beyond the Three R's. Courses other than reading, writing, and mathematics are included in some remedial programs. Although less frequently offered, some programs do include English as a second language, science, study skills, and human development. Least noted are courses emphasizing oral language skills.

Students, however, place a great deal of importance on *oral language* in the classroom setting (Hall and Carlton 1977). This emphasis on oral language was described as a "strategy" by students who recognized their own deficiencies in reading and writing.

> *. . . they have discovered that teachers in class often dictate notes directly from the textbook. This renders careful reading unnecessary. They approach teachers directly for discussion of materials or exploit classroom time for the same purpose. Alternatively, they turn to other students for help in matters they have difficulty understanding. To a large degree, they have substituted the oral route for the reading route in their learning situations and have managed collectively to curtail the amount of reading required of them. (Hall and Carlton 1977, p. 213)*

A majority of both good and poor readers use strategies other than reading for obtaining information for their classes (Spring 1975). They talk with the instructor or other students or use audiovisual materials. If the students cited here are not unique, and they probably are not, it would appear that oral language skills play a far more important role in student learning than the emphasis given to them in literacy programs would suggest.

Oral language skills are also a concern in ESL courses. The amount of emphasis placed on oral language, reading, writing, and even mathematical language and concepts depends on the purposes of the program. The extent of instruction required for immigrants and international ESL students may depend on the extent to which literacy has been developed in their native language and whether they have had any formal training in English.

The earliest efforts to improve literacy skills were described as "study skills courses." Such courses continue to be taught, usually either as a part of the human development/college survival skills curriculum or as part of the college's efforts to improve reading skills (Bohr and Gray 1979). For study skills courses to be successful, it has been suggested that they blend counseling, structured presentations, and intensive practice on materials related to course work (Maxwell 1979). Efforts have been made to prepare students for college science courses through tutoring (Kean and Welsh 1980) or through a single course not offered as part of a literacy development program.

An emphasis on affective objectives, including efforts to enhance self-

concept and self-esteem, is sometimes reported (Upton 1976; Epstein 1978). A national survey of remedial/developmental programs found that 29 percent incorporated efforts for the improvement of self-concept. Some of the programs that reported being most successful were included in this 29 percent (Roueche and Snow 1977). Responses to a survey of college presidents emphasized improving self-concept (Huffman 1976). Other affective aspects of programs included the development of positive attitudes toward education, the ability to set realistic goals, and college survival skills.

The reader should not infer that because these additional aspects of the curriculum are discussed in less detail, they are necessarily less important. They are important to practitioners designing programs and are consistent with an emphasis on functional literacy. They, like reading, writing, and mathematics, are related to the framework for literacy.

Process and Outcomes

The previous discussion of curriculum included several brief allusions to specific instructional methods in reading, writing, and mathematics. This section provides an overview of instruction, discusses institutional support for and organization of developmental programs, and reviews common practices and problems in the evaluation of developmental programs.

Instruction

Traditional classroom instruction is still a prevalent method of teaching literacy development skills, but alternatives such as learning assistance centers, tutorial programs, and other attempts at individualizing instruction are also used. While Shaughnessy (1976) stresses the importance of developing and testing innovative techniques in college basic skills programs, no particular instructional approach is consistenly associated with successful programs. In a comprehensive review of remedial mathematics programs, for example, comparative studies of teaching methods showed no significant differences in achievement (Pearlman 1977).

Individualized instruction. The importance of individualizing instruction in teaching literacy to adults has been emphasized. A majority of programs in one study included some form of objectives, diagnosis, and timing suited to the individual (Roueche and Snow 1977). Cross (1976) reported that 74 percent of the colleges in her sample used program instruction, 64 percent emphasized audiovisual aids, and 68 percent uses self-pacing methods. Tutoring by peers is also frequently mentioned, as much as 84 percent of the programs sampled in one study (Ferrin 1971). A survey of 12 colleges found the most successful programs reported greater emphasis on teachers spending time with individual students and the continued use of feedback (Roueche and Mink 1976).

Learning assistance centers. Learning assistance centers are one approach to increasing individualized assistance. Often established independent of departments, such centers may include instructional resources, instructional media, the development of learning skills, and tutoring. Some restrict their services to reading and study skills while others provide assistance in writing, science, mathematics, and other subjects. Such centers may often coordinate a major part of the tutorial services for a college. The specialists who staff these centers rarely have formal training or graduate study related to their position; instead they come from many backgrounds, including counseling, education, English, and psychology (Maxwell 1979).

Learning assistance centers on most campuses are a relatively recent phenomenon. In one survey, 61 percent of the campuses reported having a learning assistance center, and 57 percent of these had been started since 1970 (Smith, Enright, and Deveraux 1975). In another study, 84 percent of the sample had established learning assistance centers (Roueche and Snow 1977).

Other instructional approaches. Some programs develop individual con-

tracts with students specifying the skills the students are to learn; others incorporate several media (Bourn 1978). "Collaborative learning" involves students working together in small groups to discuss a plan and edit writings, with a teacher serving as collaborator to set the framework for assignments and act as a resource and guide (Gray and Slaughter 1980). Other programs include team teaching, program instruction, and to a lesser extent the use of materials drawn from black and other ethnic cultures, practical experiences, and gaming or psychodrama (Cross 1976).

Institutional Support and Organization

Institutional legitimacy, the extent to which programs have been sanctioned by the college of university, has an important relationship to how students and faculty associated with literacy development programs are perceived by their peers and may have a bearing on program success (Snow and Linquist 1977). Historically, new faculty have been assigned to teach the lowest level courses. However, successful programs are said to be those that treat faculty involved in literacy development with the same respect and access to institutional resources and benefits as other faculty (Spann 1977). All staff working with students in remedial programs should be selected for their interest, commitment, and knowledge about learning programs (Cross 1976). Instructors should be volunteers and should receive special training in teaching skills (Roueche and Snow 1977). Unfortunately, though, few graduate programs provide preparation for specializing in literacy programs.

Where programs are not offered for academic credit, which is most frequently the case in four-year colleges and universities, it is difficult to find available resources and justify their diversion to an area regarded as less than collegiate. Also, without credit, students may find it difficult to remain eligible for financial aid.

The importance of administrative leadership to the establishment and acceptance of literacy programs is frequently emphasized (Field 1981; Roueche 1978; Moore 1970), but what this acceptance means beyond providing additional resources is not always clear. Frequently both faculty and administrators view the programs as a necessary evil to be tolerated only because of the continuing failures of elementary and high schools. Many programs are financed primarily or exclusively from grant funds and thus may be dropped if funds are discontinued. The advice of experts notwithstanding, there is little evidence of strong administrative support in four-year institutions.

Similarly, the advice to use trained and committed faculty goes largely unheeded. University practices place teaching below research as a criterion for promotion and other rewards. Teaching underprepared college students how to read and write clearly offers less challenge and fewer opportunities for research than more advanced courses in a discipline. Consequently, faculty are likely to see few rewards in taking on the challenge of literacy development.

One of the most widely discussed issues in literacy development involves

how programs should be organized. At community colleges, separate, self-contained programs functioning with the status of academic departments have been advocated in lieu of the sub-college level remedial courses offered under the auspices of academic departments (Roueche and Kirk 1973; Roueche and Snow 1977; Grant and Hoeber 1978). Such programs result in students' achieving high retention rates (Buckley 1976; Eagle 1977; National Project II 1978). Unfortunately, retention rates in self-contained programs do not appear to translate into subsequent success in academic programs, leaving institutions with large populations of semipermanent students making progress toward no discernible academic objective. The resulting criticism from policy makers has led to large-scale dismissals at a number of urban colleges, accompanied by tightened requirements for academic performance (*Chronicle* 1981).

Four-year colleges and universities are more likely to offer remedial courses within academic departments. Hecht and Akst (1980), for example, specifically reject Roueche and Kirk's position (1973) that separate remedial departments be set up. In support of departmental jurisdiction, they argue that "only by housing mathematics remediation in the math department can continuity be maintained between remedial and non-remedial courses" (p. 253). Other researchers have substantiated the success of integrated approaches (Gordon and Wilkerson 1966; Fincher 1978; Fund for the Improvement of Postsecondary Education 1976; Obler, Frances, and Wishengrad 1977). The answer to the organizational issue seems to depend upon the objectives of the institution and the purpose of the program. Such issues are perhaps best resolved based on an institution's commitments.

Evaluating Students and Programs

Given the diversity of purpose, content, instructional approaches, and students served, it is not surprising that evaluations of literacy programs have been less than helpful. In reviewing evaluations of the 1940s and 1950s, Cross concludes they are "quite inadequate," noting "the criteria for success of the programs were poorly formulated, the research designs were naive, and the data interpretations and implications for improvement were weak" (1976, p. 32). Evaluations of the 1960s are worse, the confusion being compounded by the fear of many program administrators that a negative evaluation would indicate that ethnic minorities are not able to succeed even in remedial programs. Other weaknesses identified in the literature include the lack of a comparison group, a failure to use tests of statistical significance, the use of poor measuring tools (Anderson 1973), and a restriction to short-term results (Crossland 1971; Emond 1976; Fincher 1978). Student samples are often small and restrictive, and very few attempts have been made to replicate results. The majority of studies are concerned with the evaluation of students rather than the evaluation of programs (Bynum et al.1972), and few have considered issues such as cost-effectiveness or the impact on the institution as a whole.

Institutions that maintain selective admissions standards have used, as a criterion of student success, the number of students who become eligible

for regular programs as a result of their participation in some literacy programs. At the University of Utah, approximately half the students became eligible for fall admission (Grant and Angleman 1968), while the University of Texas at Austin reported that 71 percent of participants in remedial programs became eligible for standard courses (Roueche and Snow 1977).

Retention or persistence in college was a measure of collegiate success that was not often used before 1970 but has been frequently reported since then (Pedrini and Pedrini 1970; Emond 1976). The most common interpretation of student retention is simply continued enrollment or decline in the rate of dropouts. Positive results have been reported frequently by community colleges but less often by four-year institutions (Snyder and Blocker 1970; Aarons 1975). Presumably, institutions that do not get favorable results do not report them, and many institutions probably lack the data to decide whether or not their results are favorable.

A majority of the programs described in the literature use grade point average (GPA) as the major or only criterion of success (Craig 1975; Roueche and Snow 1977). Some programs report improvement in GPA during the time of remediation (Freer 1968; Lesnik 1970), but others have documented a significant drop in improvement the semester after remedial help ended (Pedrini and Pedrini 1970; Curran 1977). One study of an urban college found that passing a course in arithmetic and algebra was the single most significant factor in predicting an increase in GPA for freshman entering in 1974. At the same college, completing a remedial course in writing also contributed to improved GPA, but there was no difference between the performance of those who passed a reading course and those who failed or did not complete the course (Baranchik and Ladas 1979). In contrast, a study skills course did produce significant differences among freshmen whose Scholastic Aptitude Test scores predicted an inability to earn a 2.0 GPA (Driskell and Kelly 1980). A chemistry tutorial program designed to increase the entry of disadvantaged students into scientific professions was successful in maintaining the percentage of students receiving a C or better in the related chemistry course within 15 percent of all students in the course (Kean and Welsh 1980).

Some programs evaluate success on the basis of growth or improvement in basic skills as opposed to enrollment in regular programs. Standardized, or norm-referenced, tests are most commonly used to measure growth (Roueche and Snow 1977; Fairbanks and Snozek 1973), although some programs have begun to consider the use of criterion-referenced tests based on course content (Phillips 1973; Sanders 1973; Steinacher 1976). A few programs have used program completion or graduation as a general measure of the institution's success. Students enrolled in developmental courses compared favorably with regular students at Eastern Kentucky (Bergman 1976), Claremont College (Mornell 1973), and CUNY (Dispenzieri 1971). The CUNY study included follow-up of high-risk students to show that of those receiving the A.A. degree, almost all transferred to a four-year institution and received a B.A. degree.

Of the affective factors, self-concept and self-esteem are most often cited as important criteria of program success; a number of studies have stated that programs can improve self-concept (Roueche and Mink 1976; Tinto 1975; Gordon 1975; Bergman 1976). Training students in the development of self-concept was one of the few variables that proved to be significantly related to students' completing college (Cross 1976; Roueche and Snow 1977). In addition to self-concept, some studies have also examined movement toward an "internal locus of control" (Roueche and Mink 1976) and the effects of counseling (Gibson and Levin 1975; Hernandez 1977; Saucedo 1977).

Methods of instruction used in literacy programs have received considerable attention from researchers and evaluators. Although such studies are numerous, there is little evidence available that would identify particular methods of instruction as consistently associated with successful programs. The largest number of comparative studies have been concerned with individualized approaches contrasted to traditional classroom settings. Positive, nonsignificant, and even negative results all have been reported for individualized approaches.

Comparatively few evaluative studies have been concerned with course content rather than, or in addition to, the method of instruction. One aspect that has been investigated is the incorporation of specific rather than general content into literacy classes. Other studies evaluating the effect of specific course content do not demonstrate any advantage over the use of general suject matter (Kistulentz 1975; Broadbent 1977).

On a positive note, methodologies currently employed in evaluations of literacy programs are becoming more diversified and refined. Qualitative as well as quantitative measures are being used, multiple approaches may be used in the same study, long-term projects involving follow-through and replication are being conducted. Perhaps the most discouraging aspect of the literature is the lack of comparability among available program evaluations stemming from either a lack of detailed information or too much diversity in the details that are reported. To make matters worse, the nature of any given program may well be changing even as evaluation occurs. It is difficult to advance any generalizations about the effectiveness of programs when the literature reveals so much unsystematic variation in students' characteristics, the content and method of instruction, program organization, and even in the criteria for measuring success.

Purposes of programs and purposes or criteria for evaluation often lack the clarity needed for a reviewer to draw useful conclusions across programs. In addition, a double standard exists in that developmental programs are expected to be evaluated and to be more accountable than traditional education (National Project II 1978).

Given both the diversity of students and programs and the current emphasis on the development of literacy in higher education, the question of why no common framework exists for conceptualizing existing programs should be considered. Part of the problem may be a lack of a common understanding of *literacy* across the wide variety of programs designed to

develop it. While the programs reviewed here seem to have implicit definitions of literacy reflected in both curriculum and design, these definitions need to become explicit so they can serve as useful tools for planning and evaluation.

Toward the Year 2000

A number of issues emerge from this review of higher education's current efforts in the development of literacy, including a recognition of the prevalence of programs, the need to develop an explicit definition of literacy, and the need to clarify the purposes of efforts to develop literacy. The curricula of literacy programs should include both symbolic and functional literacy skills, and the skills taught should relate to the context in which they will be used. The organization and financing of programs are issues that also must be addressed.

The Need for Acceptance

The development of literacy skills in underprepared students is a task that many faculty and administrators in higher education have viewed with little enthusiasm. Despite that reluctance, the most recent growth of literacy development programs in four-year colleges and universities is a product of the movement to improve equity for those groups that traditionally have been underrepresented in the more selective segments of higher education. Access for minorities has improved. In 1978, 52 percent of Hispanic high school graduates, 53 percent of blacks, and 59 percent of white non-Hispanics enrolled in postsecondary institutions (Gilmartin 1979). In contrast, 97 percent of Hispanics, 94 percent of blacks, and 55 percent of white non-Hispanics failed to graduate (Cardenas 1978). In addition to higher rates of attrition, there are problems of distribution. A disproportionate number of minorities are found in community colleges, the institutions in which they have the least chance of persisting (Astin 1978).

As higher education enters the 1980s, issues of social equity have been added to problems of supply and demand, creating strong pressures for a more adequate response to students who lack the literacy skills to succeed in standard course offerings. The list of those with some claim on improved services and special assistance is by no means limited to minority students or to the socioeconomically disadvantaged who may lack the prerequisites for academic success. International students, bilingual students, those with hearing, sight, or other physical impairments, and the learning disabled should also receive assistance (Vandivier and Vandivier 1978). These special student populations, in addition to the increasing numbers of students who need assistance in refining or developing basic literacy skills, illustrate the increasing diversity of higher education's student population and the resultant need for literacy development programs.

A Framework for Understanding Literacy

Although the programs reviewed in this monograph generally seem to have an implicit definition of literacy, to be useful for planning and evaluation purposes, such definitions should be explicitly stated. Using the definition suggested here—literacy as the individual's ability to process language to fulfill functions related to individual and societal goals—programs to develop literacy would include remediation or development in all language skill areas, including reading, writing, mathematics, and oral language. Language development may be further enhanced by attention to certain func-

tional aspects of learning such as science vocabulary, study skills, or English as a second language.

Literacy skills have several levels of difficulty related to the characteristics of the language material being used and the cognitive skills required. Thus, programs may include several courses or levels in basic reading and writing to allow for entering students' individual differences in the development of skills. Where possible, the skills taught at these different levels should be taught with reference to the context in which they will be used.

Symbolic as well as functional uses of literacy should be considered in planning programs and in other college decisions. Programs designed to teach literacy skills may find it useful to clarify which skills are to be taught because they will be functional for students in their education and future work, and which skills may be important because of their symbolic meanings related to higher status in society. For example, it seems clear that certain freshman and sophomore courses serve primarily for screening. They are the guardians of the symbolic functions of literacy, which may or may not be related to the functional requirements of advanced study in a particular field. Emerging professions such as teaching, nursing, and social work have evolved so that educational requirements have been increased without specific reference to the functional requirements of the related occupations. Again, the intent has been to improve the status of those in a field by stressing the symbolic functions of increased preparation. Separating out the symbolic and functional characteristics of screening courses may provide insight into more cost-effective approaches for organizing developmental programs.

Facing Practical Realities

Chief amoung the practical realities any college must face is the problem of finance. Private and public institutions whose financing is governed by enrollment frequently discover that providing adequate assistance to underprepared students may cost more than the revenues derived from their enrollment. The choice is to take resources from existing programs that already may be hard pressed or to approach increasingly unsympathetic politicians for special funding. A third alternative, to admit underprepared students and let them sink or swim in existing programs, is not an alternative at all. Neither can institutions avoid the problem by refusing to admit the difficult to serve without incurring the risk of discrimination suits.

Juxtaposed with the issue of financial support and costs is the "unwritten policy that most of the resources should be expended on the brightest students" (Henson 1980, p. 108). Thus, two-year colleges, which in 1971-72 enrolled 25 percent of all students, including a disproportionate number of the most difficult to serve, expended only 13.8 percent of educational dollars and owned only 12 percent of higher education assets. Henson demonstrates how the brightest students and best faculty are channeled to a few institutions.

The implications of these and other data suggest that the least selective four-year colleges and universities will bear the brunt of the most intensive

efforts to deal with deficiencies in literacy. Because the least selective independent institutions depend heavily upon tuition income, while the least selective public institutions have formulas that are most heavily enrollment driven, it seems probable that efforts to serve a more diverse student clientele may be successful only to the extent scarce resources are taken from existing programs. Each campus will have to address other organizational issues. Purposes of programs and purposes or criteria for the evaluation of programs need to be defined within the context of the institution's goals. Similarly, the issue of how programs should be organized—within departments or as separate units—remains a question of college philosophy, faculty commitment, and institutional resources. As programs continue to be refined, the question of faculty qualifications and institutional rewards for teaching in such programs probably will also emerge with greater frequency.

College faculty and administrators would be helped in making such programmatic decisions if program evaluations could be improved and shared. We are beyond the state of having to use such evaluations to justify the existence of programs. What is needed now is concrete information on what approaches are successful in which types of settings.

Similarly, research on literacy, especially research grounded in the context of higher education and from the perspective of numerous disciplines, is needed to increase our understanding of the process of literacy development.

It is difficult to conclude a discussion of competency among college students on the note of optimism that those who have read this far should have every right to expect. The simple fact is that no one has yet been able to demonstrate that those who have fallen more than marginally behind because of some combination of circumstances and native ability are likely to respond to any quick fix. Nor does the redefinition of what constitutes functional literacy for college students seem to hold forth much satisfaction as an alternative for most academics. Despite the extensive and unsolicited advice we have provided to our elementary and high school systems, little progress seems to have been made in dealing with the massive problems that the ever-increasing pressures to keep students in school have heaped upon them.

Therefore, we can only suggest that it may be necessary for colleges and universities, as well as the general public, to accept the high risks of dealing with high-risk students. To the extent that we emphasize the criterion of normal progress toward generally accepted academic objectives, the failure rates will be very high. This conclusion does not mean the effort is unimportant or that significant results cannot be achieved over time. It only implies that costs will be extensive and the immediate rewards limited. Accepting the need to persist as well as the absence of any quick fix may be the first step in resolving the problem.

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